cc Lynn
File M0030016

USDA United States Department of Agriculture
Forest Service
Sawtooth National Forest
Minidoka Ranger District
3650 South Overland Ave.
Burley, ID. 83318-3242
208-678-0430
Fax: 208-677-4878

File Code: 2810
Date: February 6, 2006

Mr. William Bown
Bonneville Quarries, Inc.
842 West 400 North
West Bountiful, UT 84087

Dear Mr. Bown:

Enclosed is a copy of the Environmental Assessment and FONSI/Decision Record for the Dove Creek Quarry Expansion.

It is our understanding that the quarry is in the process of being transferred to Dove Creek Quarries, LLC.

Please review the Environmental Assessment and especially the mitigation measures. We would like to sit down with you as soon as possible to discuss these, and the incorporation of them into your plan of operations. We have also calculated a bond estimate for this expansion, and would like to go over this with you as well, in light of the considerable amount of reclamation that has been done at the operation last fall.

If you have any questions or comments, please contact Steve Flock, Minerals Management Specialist, at the above address or telephone number.

Sincerely,

Scott Nannenga

SCOTT C. NANNENGA
Minidoka District Ranger

cc. Mr. Jerry Cates
Dove Creek Quarries, LLC
HC63 Box 0001
Park Valley, UT 84329

Mr. Lynn Kunzler
Utah Division of Oil, Gas and Mining
Box 145801
Salt Lake City, UT 84114-5801

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Forest Service

November 2005

ENVIRONMENTAL ASSESSMENT

Bonneville Quarries, Inc.
Dove Creek Quarry Expansion

Minidoka Ranger District
Sawtooth National Forest
Box Elder County, Utah

T. 13N., R. 16W., Sections 12, 13, 14,
Salt Lake City Base Meridian

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CHAPTER 1 – INTRODUCTION

SUMMARY

This environmental assessment (EA) has been prepared by the Sawtooth National Forest, Minidoka Ranger District, to describe the environmental effects of an amended mining plan of operations (Dove Creek Quarry Plan of Operations) for locatable Oakley Stone submitted by Bonneville Quarries, Inc. The project area is located at Clark's Basin, Raft River Range, Box Elder County, Utah, T. 13N. R. 16W., Sections 12, 13, and 14, Salt Lake City Base Meridian, Minidoka Ranger District, Sawtooth National Forest.

The proposed Bonneville Quarries, Inc. Project is consistent with the overall management direction provided in the 2003 Land and Resource Management Plan (Forest Plan) for the Sawtooth National Forest. The Forest Plan is on file in the Minidoka Ranger's Office in Burley, Idaho.

In addition to the proposed action, the Forest Service has also evaluated the No-Action Alternative. Based upon the effects of the alternative, the responsible office will decide whether or not to implement the proposed action as submitted and what mitigation measures, if any, would be required to mitigate short-term effects of the proposed action

BACKGROUND

Bonneville Quarries Inc. has operated at Clark's Basin since they located mining claims there in the early 1960s. They operated under special use permits authorized by the Sawtooth National Forest until 1990 when they were required to submit a plan of operations under 36 CFR 228A. On April 28, 1978 in the Office of Hearings and Appeals, USDI Administrative Law Judge John R. Rampton concluded that building stone claims of quartzite stone meeting certain criteria, were a unique and valuable mineral deposit. It was therefore determined to be an uncommon variety subject to location under the mining laws. Locatable minerals are hardrock minerals which are mined and processed for the recovery of metals, or minerals which are "valuable" in the economic sense. Thus, the Forest Service treats this Oakley type of quartzite building stone as an uncommon variety which is subject to the mining laws for locatable minerals.

The plan of operations amendment under review was originally submitted in 1995. In the early 1980s, a land exchange was completed between the U.S. Forest Service and Kunzler Ranch in which the Kunzler Ranch received the southern half of Section 14 in exchange for private lands elsewhere on the Raft River Range. Since Bonneville Quarries had claims in the southern half of Section 14 during the exchange process, the Kunzlers granted Bonneville Quarries the rights to the minerals and guaranteed access to the Forest Service.

This environmental assessment identifies the issues associated with the Bonneville Quarries, Inc. proposal (the proposed action), alternatives to the proposed action, existing environmental resources, environmental impacts of the proposed action and alternatives on the resources, and a listing of the persons consulted.

PURPOSE AND NEED FOR ACTION

This project would fulfill rights granted to mine claimants under the General Mining Law of May 10, 1872 and subsequent mining laws to have access to and to develop and extract locatable minerals. The purpose and need of this proposal is evaluate an amended mining plan of operations submitted for locatable mineral development under 36 CFR 228A.

This action follows the Forest-wide Management Direction (MIGO01) for Mineral and Geology Resources in the Sawtooth Land and Resource Management Plan (July 2003):

> "Facilitate orderly and environmentally sound exploration, development, and production of mineral and energy resources."

This action responds to the goals and objectives outlined in the July 2003 Sawtooth Land and Resource Management Plan (Forest Plan) for Management Area 18 (Raft River Range) for Shrubland and Grassland Landscapes: Under Management Prescription Code 6.1 for road construction:

> "Road construction or reconstruction may occur where needed:
> a) To provide access related to reserved or outstanding rights…"

PROPOSED ACTION

Bonneville Quarries Inc. has submitted a plan of operations amendment for expansion of their Oakley Stone operations at Clark's Basin, Raft River Range, Box Elder County, T.13N. R.16W., Sections 12, 13, and 14, Salt Lake City Base Meridian (Figure 1).

Bonneville Quarries, Inc. currently operates five stone (Oakley stone) quarries in Clark's Basin, four on Forest and one on private land (Photo 1):

- Main Quarry 3.45 acres (Photo 2)
- West Quarry 2.74 acres
- Dad's Dream 1.6 acres
- Upper Quarry 0.73 acres
- South Quarry (Private) 2.7 acres

Photo 1 - Bonneville Quarries, Inc. Existing Operations Looking Southeast

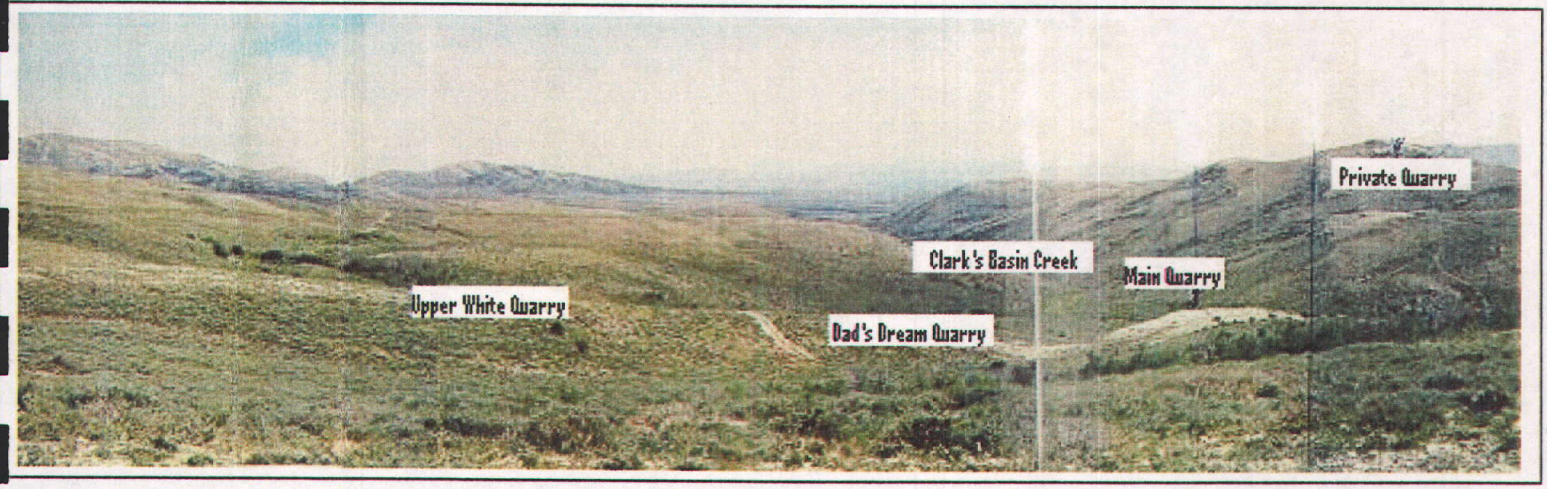

Photo 2 -- Main Quarry 3.45 acres

Current operations include the use of heavy equipment and blasting to break the stone loose. The heavy equipment to be used is large trackhoes and 10 and 20-yard dump trucks. Air compressors and air drills are used to prepare the stone ledge for blasting if the ledge being worked does not have enough natural fractures. The trackhoes then load the stone slabs into dump trucks for hauling to a process area. The processing areas are on the quarry sites and at remote locations. At the processing site the stone slabs are hand split to size and sorted by grade and size class. At the present most of the Oakley stone is sold in the U.S., but there is also an international market.

During an average year, operations begin around May 1 and continue into mid-November depending on weather and road conditions. A quarry camp for workers is located next to the quarry on private land. On-site fuel storage is not utilized.

Bonneville Quarries, Inc. proposes expansion of its current operation into two new quarry locations (Photos 3 and 4):

— Vertical Cloud 1.42 acres
— Sunshine East 3.18 acres

The total proposed disturbance on the Sawtooth National Forest would be approximately 18 acres.

Once the Vertical Cloud and Sunshine East Quarries are open, Bonneville Quarries would concurrently reclaim the Dad's Dream and Upper Quarries reducing acres disturbed to approximately 10 acres.

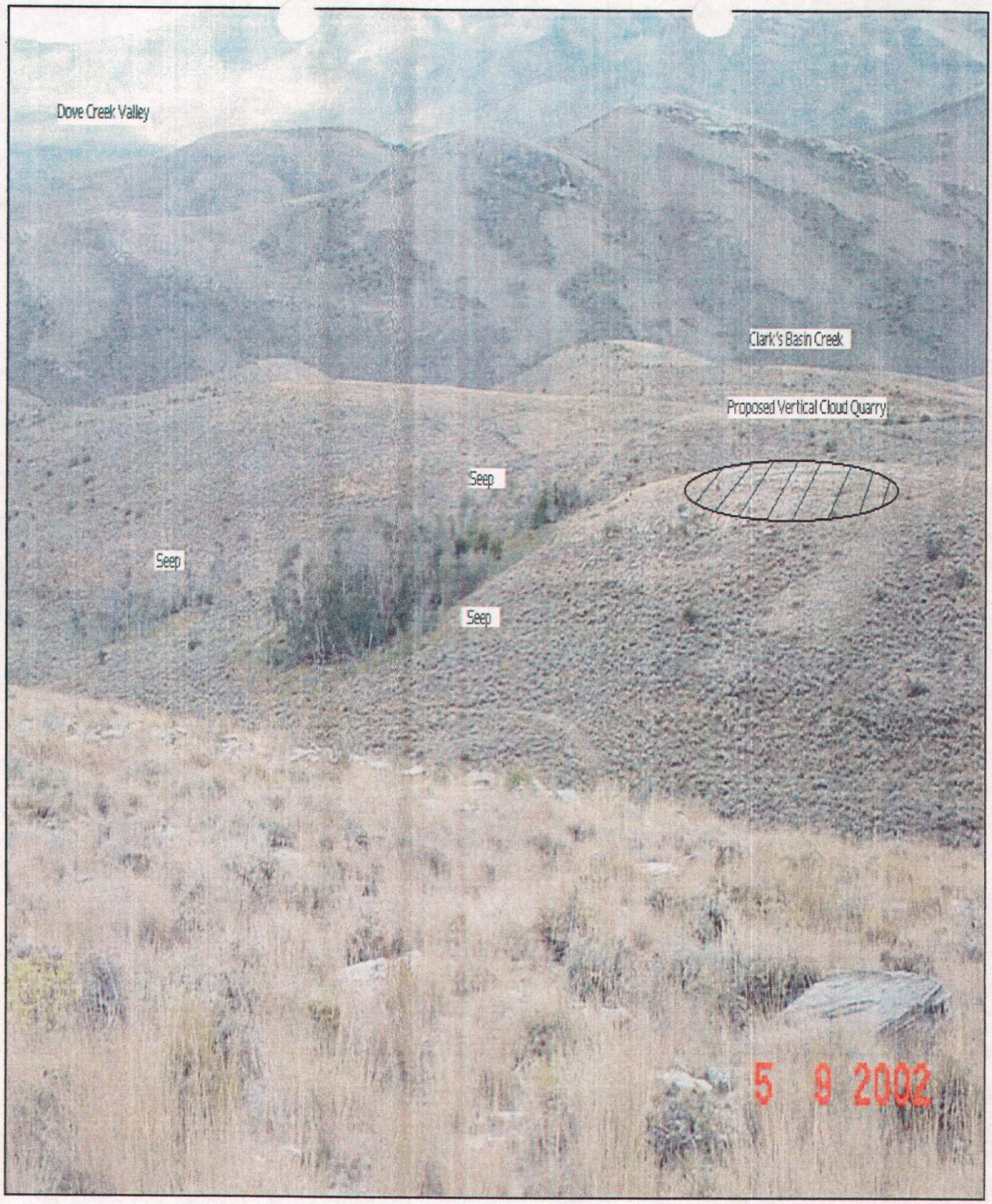

Photo 3 -- Proposed Vertical Cloud Quarry From Proposed Sunshine East Quarry

The Vertical Cloud Quarry would be constructed to a depth of 30 feet, after which Bonneville Quarries Inc. would re-evaluate whether it was economical to go deeper.

Photo 4 - View From Vertical Cloud site to Sunshine East site

A highwall would be left on the southern edge of the quarry, with waste rock going to the southwest of the quarry where the material can easily be brought back into the pit during reclamation. The quarry would be started by the construction of a trench on the western boundary of the quarry. Once the trench had exposed enough of a face in the stone, quarrying would begin in a west to east direction. Because of the orientation of the stone, drilling and blasting would not be necessary.

The Sunshine East Quarry would be constructed to a depth of up to 75-80 feet. Three distinct color units, which are oriented horizontally, would be quarried. Each unit would have a separate bench and work area for a total of three or four benches within the quarry. There is virtually no overburden at this site so there would be little waste rock storage. Drilling and blasting would be done at a frequency of once per month. Because there would be little waste rock at the end of operations, there would not be enough material available to recontour the pit walls. This would leave a permanent pit face of up to 80 feet high at this location.

Bonneville Quarries also proposes utilizing 5365 feet of a non-system road constructed by Interstate Rock Products in August 2000, reopening 650 feet of previously reclaimed road, improving 225 feet of an existing two-track road, and constructing 1225 feet of new access road. Total length of new roads under the proposal would be 7465 linear feet with an approximate disturbance of 2.7 acres.

Existing operations produce approximately 1500 tons of finished stone per year from the existing quarries. With the addition of the two new quarries approximately 5000 tons of palletized finished stone per year would be removed by the operation.

The current existing quarries would not expand appreciably outside of existing disturbance.

At the end of operations all quarries would be backfilled as much as possible with available waste-rock and topsoiled. Project roads would be recontoured to original slope. Disturbed areas would be seeded and vegetation must meet 70% cover of adjacent undisturbed areas before the bond for the project could be released.

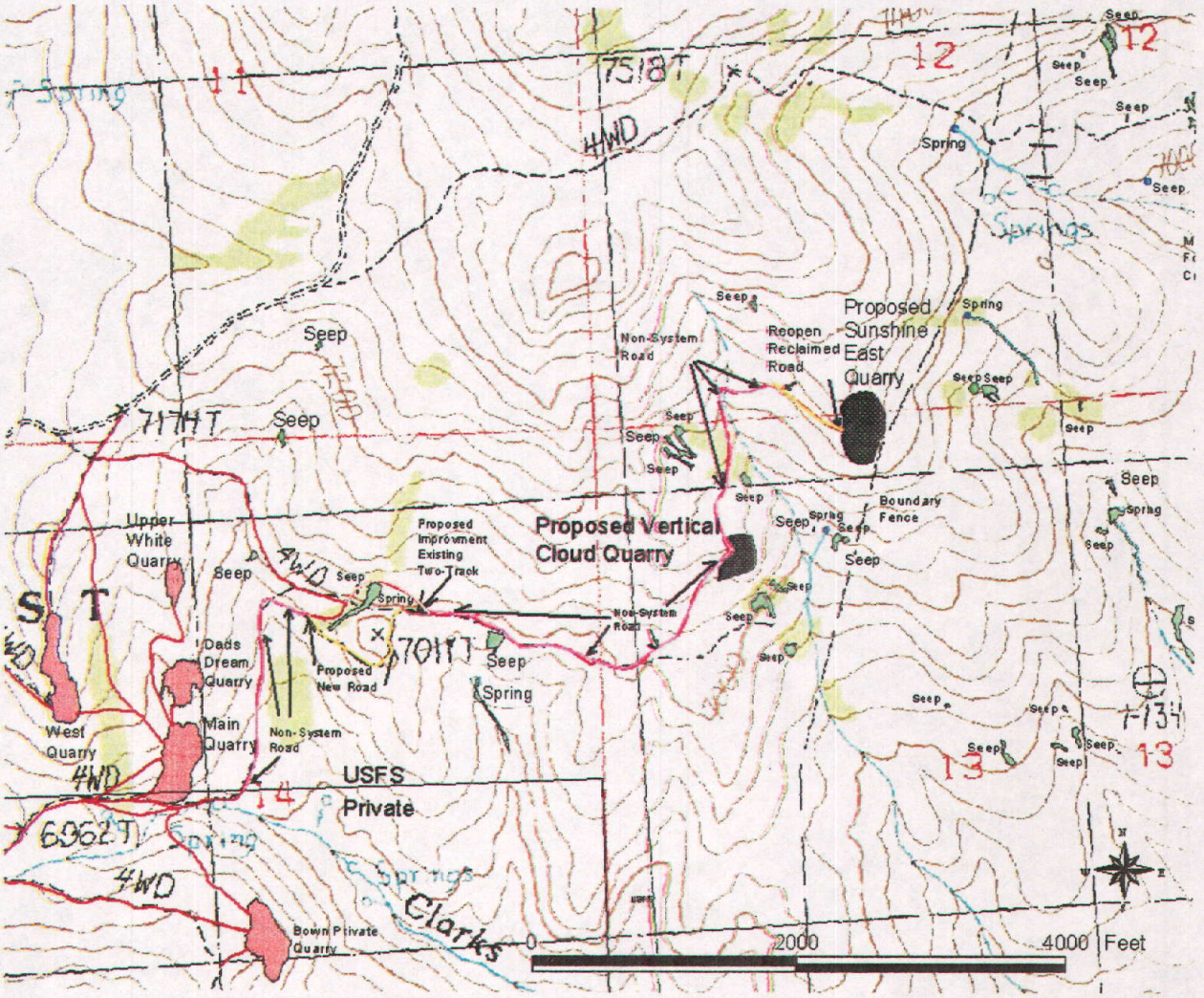

Figure 1 Bonneville Quarries, Inc. Dove Creek Project

Bonneville Quarries, Inc. currently holds 7 placer mining claims in the Clarks Basin area covering 501.6 acres on the National Forest (Figure 2):

Sunshine #1	80 acres	UMC353628
Sunshine #2	80 acres	UMC353629
Sunshine #3	80 acres	UMC353630
Sunshine #4	80 acres	UMC355715
Conglomerate	80 acres	UMC353617
Gray Gold	80 acres	UMC353625
Gray Line	21.6 acres	UMC367687

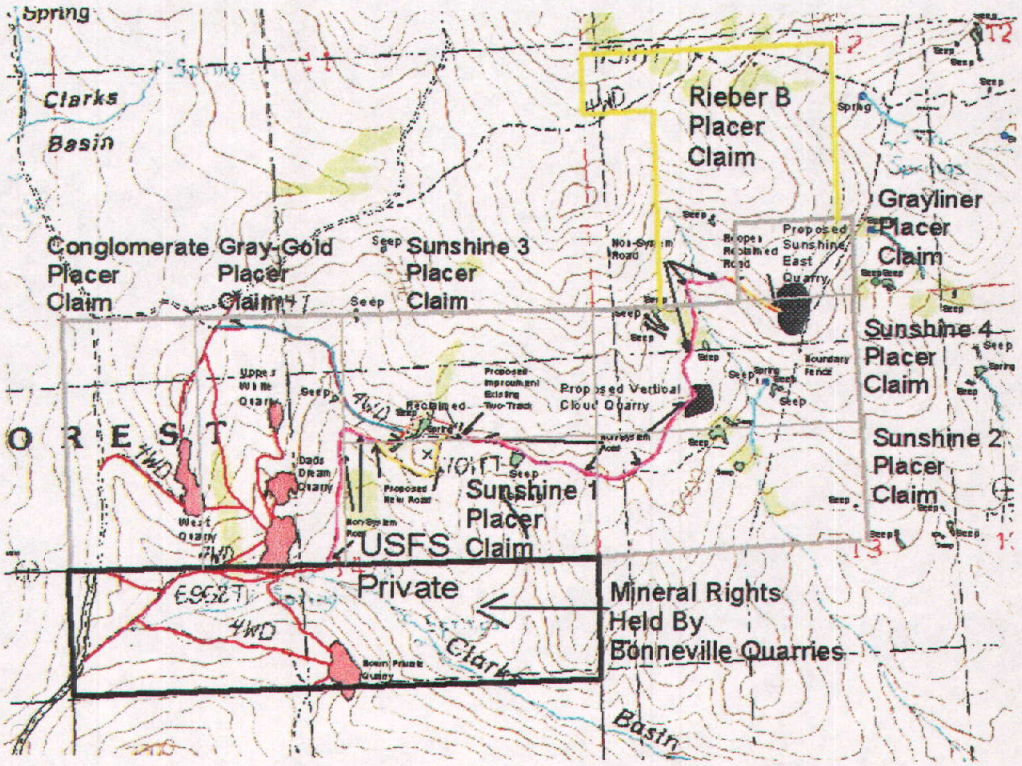

Figure 2. Bonneville Quarries, Inc. Claim Map

Bonneville Quarries, Inc. also holds deeded mineral rights on 160 acres of privately owned surface along the Forest Service Boundary.

A portion of the existing non-system access road (760 linear feet) is on the Rieber B Placer Claim (80 acres, UMC 357462) held by I & P Investments, LLC.

Decision Framework

The legal authority of the Forest Service to regulate locatable mineral operations on National Forest System Lands is based on the 1897 Organic Act and described in regulations found in 36 CFR 228. These mining regulations emphasize Forest Service authority to require Plans of Operations for locatable mineral proposals, which prevent unreasonable and unnecessary environmental damage and provide for reclamation of the surface resources. Under these regulations, the responsible official must decide whether or not to:

(1) Approve the Plan of Operations as submitted; or
(2) Approve a Plan of Operations which has been modified to prevent unnecessary and unreasonable environmental resource damage; or
(3) Approve a Plan of Operations, which has been modified contingent upon additional mitigation measures.

The Minidoka District Ranger is the responsible official with delegated authority to make and implement a decision on the proposed action. This environmental analysis includes an analysis of direct, indirect, and cumulative effects associated with the proposed project and alternatives.

Public Involvement

The proposal has been listed on the Schedule of Proposed Actions since 1999 to present day (2005). The proposal was originally distributed for public scoping on May 5, 1999. No comments were received to that scoping letter. The proposal was again sent for public scoping on November 1, 2002.

Seven comments were received as a result of that scoping letter. See Chapter 4 for agencies/persons consulted.

Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues to address, which were approved by the District Ranger.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside of the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec 1501.7, "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec.1506.3)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the project record.

As for significant issues, the Forest Service identified 3 topics raised during scoping. These issues are:

Issue #1 Wildlife: Project activities could affect the abundance and distribution of terrestrial wildlife habitat and its capacity to support viable populations for:

1. Sage Grouse
2. Mule Deer

Indicators:

- Change in disturbance acres and level of equipment activity to nearby sage grouse habitat during critical time of year (May)
- Change in disturbance acres and level of equipment activity during deer fawning season (June)

Issue #2 Hydrology & Soils including Spring/Seep Impacts: The proposed Vertical Cloud Quarry is within 200 feet of two active seeps, one of which appears unstable with evidence of saturated ground movement. Proposed project could increase surface vibration through the use of heavy equipment and occasional use of explosives increasing vibration to unstable seep areas. Both equipment and explosive vibration to the aquifer and the development of a small quarry immediately up gradient from the seeps could alter flow patterns and rates of recharge for the seep areas.

Indicators:

- Changes in volume of flow from the seeps
- Soil failure within saturated seep areas

Issue #3 Range: Projects activities would occur in the spring while sheep are lambing and watering near the project area. It takes several weeks for a lamb to develop a sense for their environment and the potential of lambs being hit, while trailing from water and feed, by equipment traffic is probable.

Indicators:

- Level of equipment activity during lambing season. (May and June).

Permits and Approvals

Federal and State of Utah permits, approvals, and regulations which apply to the proposed project include the following:

- Decision Notice and Finding of No Significant Impact by the Minidoka District Ranger
- Approval of the Plan of Operations and Reclamation Bond by the Minidoka District Ranger
- Rules and Regulations governing exploration and surface mining operations in Utah, Utah Department of Oil, Gas and Mining.

CHAPTER 2 - ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Dove Creek Quarry expansion. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative.

Alternative 1 The Proposed Action

Under Alternative 1, an expansion would occur of the existing Bonneville Quarries, Inc. Dove Creek Project from approximately 9 acres to approximately 18 acres. It would consist of two new quarry locations, Sunshine East and Vertical Cloud Quarries, with associated road maintenance and new road construction. (see Chapter 1 – Proposed Action, for a detailed description.)

Alternative 2 No Action – Current Management

Alternative 2 represents the baseline condition of the environment as characterized in of this Environmental Assessment. Alternative 2 is compared to Alternative 1 (proposed action) and the feasible project alternatives. This alternative does not allow expansion by Bonneville Quarries, Inc. and selection of Alternative 2 requires that the Forest Service disapprove of the Plan of Operations as submitted. The Plan of Operations is returned to Bonneville Quarries, Inc. with stated reasons for disapproval. If this occurs, Bonneville Quarries, Inc. may submit a substantially new or revised plan that meets the environmental and administrative constraints of the Forest Service. The Forest Service can require or impose reasonable environmental controls and conditions on the Plan of Operations. The Forest Service does not have the authority to disapprove a Plan of Operations for a mining project that is conducted in a reasonable and environmentally responsible manner, as provided by the General Mining Law of 1872 and 36 CFR 228. Under Alternative 2, existing operations by Bonneville Quarries, Inc. would continue within the current existing disturbance. This alternative best addresses Issue #2 – Spring & Seep Impacts.

Alternative 3 Proposed Action with Vehicle Restrictions

Alternative 3 is essentially the same as Alternative 1, except it has limitations on the mechanized operations on National Forest System lands during the period the Upper Dove Creek Area is closed to the public. The operator would be limited to the existing level of mechanized operations during the Upper Dove Creek Area closure period, from May 1 – June 30. This would limit hauling of rock by trucks from the new quarries to the current level of approximately 1 truck per day, but would not restrict haul truck travel to the existing quarries because hauling occurs over private land. After June 30, the operator could haul rock from the new quarries to the proposed 2.1 loads per day. The operator would be able to open and operate both the Sunshine East and Vertical Cloud

Quarries prior to June 30. This alternative best addresses Issue #1 Wildlife and Issue #3 Range.

Comparison of Alternatives

This table displays the differences by alternative.

Table 1 – Comparison of Alternatives

	Alternative 1 (Proposed Action)	Alternative 2 (No Change / Current Management)	Alternative 3 (Proposed Action with travel restrictions)
Boundary	Increase 10 acres	No change	Increase 10 acres
Acres of expansion disturbance	7.3 acres NFS Lands	No change	7.3 acres NFS Lands
Acres reclaimed after close of operations	17.82 acres NFS Lands 22.72 acres total	10.52 acres NFS Lands 15.42 acres total	17.82 acres NFS Lands 22.72 acres total
Haul truck trips/ day maximum to new quarries May 1 – June 30	2.1	1	1
Haul truck trips/ day maximum to new quarries July 1 – Autumn (snowfall)	2.1	1	2.1
Quarry Acres	13.12 acres NFS Lands 15.82 acres total	8.52 acres NFS Lands 11.22 acres total	13.12 acres NFS Lands 15.82 acres total
Roads linear miles	3.44 miles NFS Lands 5.64 acres total	2 miles NFS Lands 4.2 acres total	3.44 miles NFS Lands 5.64 acres total
New Mechanized Operation Limitations	None	None	May 1 – June 30, 1 truck/day from the new quarries. After June 30, 2.1 truckloads/day.

Other Factors

There are no flood plains, prime or unique farmlands, wetlands, municipal watersheds, congressionally designated areas, wilderness, wilderness study areas, national recreation areas, inventoried roadless areas, or research natural areas that would be impacted by the alternatives. All alternatives comply with Federal, State, or local law or requirements for the protection of the environment.

Mitigation Measures for the Alternatives 1 and 3

1. Non–native Plant Mitigation

To ensure that non-native plant species concerns are addressed within the Dove Creek Quarry Project, the following Forest Plan direction will be followed. Detailed direction for non-native plant mitigation can be found in Chapter III of the Sawtooth Forest Plan (pages III-36 and III-37). Key actions and/or requirements will be summarized here to ensure this project meets Forest Plan standards for non-native plants:

- Only certified weed-free hay, straw, feed, mulch, and all seed should be used in the project area (NPST01, NPST02, NPST06)
- In the operating plan where land-disturbing activities take place, include the following provisions:
    - Revegetate areas as per NPSTO3. Forest Botanists will be consulted to determine if reseeding is necessary following implementation of the Alternative 1. If seeding were determined necessary, a Forest Service botanist would recommend a Forest Service approved and appropriate native seed mix.
    - Include clean equipment provisions as per NPST03 (standard). Ensure that excavators, backhoes, trucks, and other equipment are clean (i.e., not capable of transmitting noticeable sediment, noxious weed seed, or other substances).
    - A washing station off-Forest, if possible, should be established to limit weed seed being introduced into the operation site and newly disturbed areas as per NPGU03.
- Treat weeds prior to ground disturbing activities such as road construction or pit expansion. If areas identified for project implementation are within known noxious weed sites, treatment/eradication efforts must be made prior to ground disturbing activities as per NPST10. Control noxious weeds during operational phases to limit the amount of seed in the soil. Control weeds on the topsoil stockpile through treatment or planting preferred species in these storage areas.
- Source sites for gravel and borrow materials should be inspected prior to use or transport as per NPST07. Do not use gravel or borrow material from areas with noxious weed present as per NPST08
- Where feasible and practical, staging and parking areas should be located in weed free sites as per NPGU04.

2. Watershed (Hydrology and Soils) Mitigation

- No fuels or lubricants are proposed to be stored on site. Fuel or equipment spills from equipment failure could occur. If such equipment problems occur, the equipment will be brought to a line containment area to prevent contamination of groundwater or surface runoff. The operator is required to notify the Utah Department of Environmental Quality and the Utah Department of Oil, Gas and Mining in the event of a spill. The operator

will also notify the Forest Service in case of spills or other hazardous material incidents at the site.

- Fueling and vehicle maintenance will take place in a lined containment area.

- No equipment will be left on site at the close of yearly operations to limit the possibility of fuel or hydraulic fluid leaks from unattended equipment.

- In order to prevent movement of the unstable masses below the proposed Vertical Cloud Quarry, the operator will not load the slopes immediately above the seeps with waste rock material from quarry operations. Additionally, waste material will not be side cast over the area above the seeps to preserve the water quality of the seeps. (Issue #2)

- Topsoil shall be salvaged, stockpiled, and seeded (interim reclamation) ahead of quarry operations to provide a suitable plant-growth medium for reclamation. Where available, the top 12 inches of topsoil shall be salvaged. As soil depth at the site may be shallow or nonexistent, soils in these areas shall be salvaged to the available depth.

- Blasting will not occur within 500 feet or greater from seeps and springs. Fly rock travel distance would be monitored to determine if the fly rock is reaching the springs and seeps or intermittent channels, for a given size of blast (based on typical blast size/explosives amounts used). Blasting activities would cease and the authorized officer would be notified in the event of failures/mass movement being initiated within seep areas. (Issue #2)

- Per Figure 3 – Stream Course Crossings (below), a waterbar will be constructed, leading out onto the contour of the downslope side of the road, so that the runoff would be directed into the upland vegetation (sagebrush) and would not be directed into the spring site. Also, the low point in the road directly above the spring will be graveled with a layer of crushed rock, at least 0.75 inch in size, to a depth of 2.5 to 3.5 inches (Idaho BMP, page 8). This will prevent rutting and reduce the potential sediment input into the spring source. Gravel should also be placed on both approaches for approximately 75 to 100 feet. At the channel crossing on the new road section, a gravel crossing will constructed of a layer of crushed rock, at least 0.75 inches in size onto the crossing surface to a depth of 2.5 to 3.5 inches. At the ephemeral drainage crossing, a layer of crushed rock at least 0.75 inches in size onto the crossing surface to a depth of 2.5 to 3.5 inches. At the Clarks Basin Tributary Crossing the existing crossing and approaches will be graveled with a layer of crushed rock at least 0.75 inches in size onto the road surface to a depth of 2.5 to 3.5 inches. The road/stream crossings should be kept as perpendicular to

the streamcourses as possible (SWCP 15.15) to minimize damage to the streamcourses.

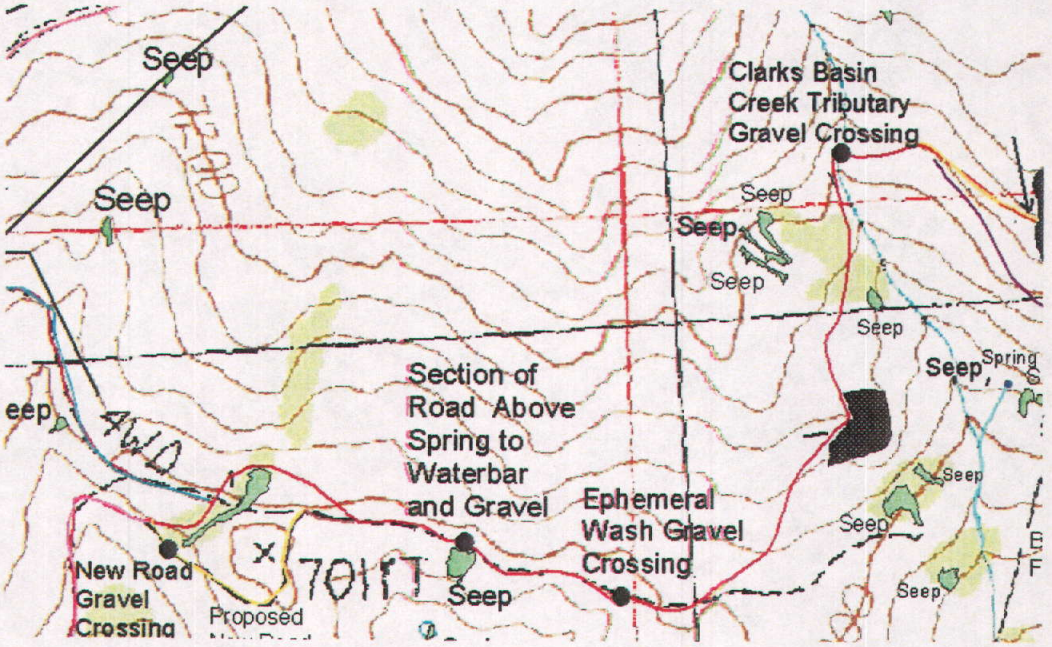

Figure 3 Stream Course Crossings

- The project life is projected to be 30 years. Projected reclamation for the project area will include:

  Restoration of Vertical Cloud Quarry:
  1. Backfill pit and recontour to achieve natural slopes
  2. Spread salvaged topsoil and reseed
  3. Mulch areas that have been reseeded

  Restoration of Sunshine East Quarry:
  1. Slope-back the pit walls
  2. Pull-back of side cast material and waste piles where available
  3. Recontour where sufficient waste material is present
  4. Reseed where suitable growing medium exists

  Road Reclamation (1.4 linear miles):
  1. Rip and pull back sidecast material
  2. Recontour
  3. Seed

- Since the project life is projected to be 30 years, refinement of Best Management Practices (BMPs) for site reclamation should be assigned at that time to assure that the most current reclamation measures and technologies are employed.

3. Public Safety

- During operations, warning signs will be posted warning the public about mining activity and heavy equipment road traffic.
- During periods of non-operation, warning signs will be posted warning the public about possible hazards, specifically high walls and rock fall areas below waste rock dumps.
- No explosives, blasting caps, or detonation cord will be stored on site during operations

4. Wildlife Habitat

- Addition of a gate and appropriate signing to limit non-quarry vehicle travel within the off-road motorized vehicle closure (Sawtooth Forest Closure Order, May 1 – June 30th). (Issue #1 and #3)
- Avoid blasting activities in May during early morning (sunrise to 0900). (Issue #1)
- No quarrying activities within Riparian Conservation Areas (RCAs) or within spring or seep areas. (Issues #1 and #2)
- Reclamation of abandoned quarries will meet 70% cover of adjacent undisturbed areas when quarrying ceases. (Issue #1)

Monitoring for the Proposed Action

1. A monitoring system for the seeps below the Vertical Cloud Quarry will be setup by the operator. This will include setting up several survey and photo points to determine if slope movement is occurring.
2. Introduction of noxious weed populations resulting from both existing and proposed operations would be monitored by both the operator and Forest Service.
3. At a minimum, a yearly inspection would be conducted by the Forest Service of the operations.
4. Monitor to assure reclamation of existing quarries is occurring concurrently with development of new quarries and to assure 70% cover requirement is met.
5. Monitor springs and seeps in the vicinity of the quarries for mining related impacts, including soil stability, sedimentation, flyrock, and waste rock impacts.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section characterizes the existing environment in terms of each resource within the Bonneville Quarries, Inc. project area, and estimates the environmental consequences of the alternatives on these resources. Only those resources identified as Issues or resources that must be analyzed due to law or regulation, are discussed in detail.

The Raft River Range is an east-west trending mountain range as opposed to the general north-south trending mountain ranges of the Basin and Range. The range is a doubly plunging anticline, with a core that is generally dominated by metamorphic bedrock. The Clark's Basin area is comprised of primarily Precambrian and Cambrian quartzite and schists cut by several thrust faults and by a normal fault that runs northward through Clarks Basin Spring. The proposed quarry locations are within the Elba Quartzite unit, which is a thin to medium-bedded white or green quartzite that can be split to a thickness of less than ¾ inch. Because of metamorphic folding and thrust faulting, the quartzite beds vary in attitude from nearly vertical at the proposed Vertical Cloud Quarry to nearly horizontal at the Sunshine East Quarry. The normal fault is Middle to late Quaternary in age (<750,000 years) with an estimated slip rate of less than 0.2 millimeters/year. To the north of the project area, the area around Clark's Basin Spring is composed of Quarternary gravels and Aeolian deposits.

OVERVIEW OF QUARRY OPERATIONS

Oakley stone is a mica-rich quartzite composed of primarily alternating layers of quartz and mica. No sulfide mineralization or deposits of metal rich ore are associated with the quarry locations. Because of the lack of sulfide mineralization, there is little potential for acid generation or the mobilization of metals into surface or ground water. The potential for sediment generation from the clay rich regolith material is a possibility especially during wet periods.

The Clarks Basin Road (Forest Route 018) is the primary access to the quarry operations. The Clarks Basin Road is accessed from the Box Elder County Dove Creek Road that takes off Highway 30 just west of Rosette, Utah. The Forest Service has a 60' easement where the Clarks Basin Road crosses private land on the Forest Service boundary. Access to the two new quarry locations would be mostly on existing roads.

The proposed quarries are located within an area defined in Box Elder County Ordinance 222 as the Upper Dove Creek Area. The Sawtooth National Forest Land and Resource Management Plan Objective 1836 for facilities and roads states activities with the Raft River Management Area (18):

> "Off road motorized vehicle travel in this area is limited to designated roads and trails from May 1 through June 30."

Under Box Elder County Ordinance 222 - Section 4:

"…this ordinance shall not apply to public employees acting within the scope of their lawful authority, or grazing or mining permittees of governmental entities and public land lessees whose travel is to be in accordance with their respective permits or leases."

Existing operations average 91 loads of stone removed from the site per operating season representing 1500 tons per of stone shipped from the site. This averages about 1 load per day shipped from the site. A load consists of 8 pallets of stone with each pallet weighing approximately 2 tons. These are loaded onto a ten wheeled flatbed diesel truck. Current road conditions on private lands off the National Forest do not allow for bigger trucks and/or trailers capable of hauling larger loads.

Hazardous materials for the existing quarry operations are limited to petroleum products utilized in equipment and vehicle operations and explosives that are used on an intermittent basis. Previous inspections of this site have found occasional leaks of either oil or diesel fuel from equipment. These spills are usually very small and are easily cleaned up. Operation of equipment generates minimal emissions of NO2, CO, and SO2. Explosive usage is done by contractors that bring the explosives on to the site. No explosives are stored on site.

The impact of mining on minerals resources under all alternatives would be that Oakley stone that is mined under this project would no longer be available for future production. It is an irreversible loss. Because of the proximity of recent geologic faulting, there is a possibility of seismic activity that could produce minor rockfalls in the quarry locations.

ISSUE #1 - WILDLIFE

Existing Conditions

Wildlife Habitat

The Dove Creek Quarry Expansion supports potential habitat for special status species of terrestrial wildlife. Proposal of the Dove Creek Quarry Expansion requires analysis of the effects of the alternatives on wildlife habitat for these special status species. Effects to Management Indicator Species (MIS), Threatened, Endangered, and Region 4 Forest Service Sensitive species (TES), and other special interest wildlife will be analyzed in this section.

There are currently no Threatened or Endangered terrestrial wildlife species using the Dove Creek Quarry. Habitat for a number of Region 4 Sensitive species, as well as one, MIS species exist within the project area. These species include, but are not limited to, northern goshawk, greater sage grouse, and pygmy rabbit. Roosting and foraging habitat for region 4 Sensitive bat species occurs throughout the project area. Habitat for big game species including antelope, elk and mule deer, exists throughout the project area, from high to low elevation, in forested and non-forested areas. Sage grouse were once very common throughout the sagebrush communities surrounding the Quarry location and still occur there but in smaller numbers than were historically found here. Much of the area surrounding the quarry provides nesting and foraging

habitat for migratory birds and general habitat for predators such as, mountain lion, bobcat, and coyotes.

Threatened and Endangered Species
The Utah Field Office of the U. S. Fish and Wildlife Service provided a species list, dated December 2, 2002 and updated May 21, 2004, indicating that one threatened terrestrial wildlife species and one candidate for listing could potentially occur on the Raft River Division of the Minidoka Ranger District. No endangered terrestrial wildlife species or species proposed for listing occur within the project area. All of these species are addressed below and in the Biological Assessment prepared for this project. The Fat-whorled Pondsnail, Lahonton Cutthroat trout, June Sucker, and Mountain Plover were also on this list for consideration in Box Elder County, but these species are not currently present, nor historically known to occur on the Raft River Division, nor in the vicinity of the quarry location. For this reason, there is no effect to these species and they will not be addressed further in this document.

Forest Service Sensitive Species
The SNF provides habitat for 16 Forest Service Region 4 sensitive terrestrial species. Ten of these species have potential habitat within the vicinity of the quarry locations. The effects to these species are addressed in the Biological Assessment and Biological Evaluation prepared for this project.

Management Indicator Species (MIS) - MIS are used to assess effects of management activities on groups of species with similar habitat requirements. Greater sage-grouse *(Centrocercus urophasianus)* has been designated an MIS species in the revised FLRMP (2003) as it is indicative of conditions in sagebrush ecosystems. Greater sage-grouse are used to evaluate effects of this project.

> **Greater Sage- Grouse** – Despite management and research efforts that date to the 1930's, breeding populations of Greater sage-grouse have declined 17-47% throughout much of its range (Connelly and Braun, 1997). Causes are frequently attributed to habitat fragmentation, land conversion, overgrazing, introduction of exotic weeds, and altered fire regimes (Miller, R F., and L.L. Eddleman 2001). No single factor can be identified as the cause of declines in sage-grouse populations.
>
> Greater sage grouse are highly dependant on sagebrush for food and cover throughout the year. They feed almost exclusively on sagebrush throughout winter. Most sage-grouse nests are located under sagebrush plants that provide overhead cover, with 15 to 30 percent canopy cover preferred. Late brood rearing habitats usually have less dense sagebrush canopy than nesting habitats and generally have a higher proportion of grasses and forbs in the understory. Riparian meadows, springs, and seeps are important for sage-grouse as they produce forbs and insects necessary for juvenile birds (BLM 2004).
>
> The Utah Division of Wildlife Resources estimates sage grouse populations in northern Utah to be on a long-term downward trend. Sage-grouse surveys conducted annually since 2000 indicate a short upward trend in Sage-grouse numbers in west Box Elder County. (pers. comm., Kirt Enright, UDWR). Generally speaking, sagebrush

communities within the project area provide adequate foraging and hiding cover for sage-grouse.

Other Species Affected by Management Actions

Mule Deer – The quarry operation is within UDWR subunit 1A, which is all of Box Elder County west of a line from the Great Salt Lake north to Strevell. The mule deer population recently (2002) hit a low due to three years of drought and the corresponding low fawn production. The population is currently increasing slightly due to increased fawn production during 2002 and 2003. The long-term trend indicates a declining population. The subunit A population is summer range limited and appears to be tied to vegetative growth supported by winter and spring moisture (UDWR 2004). Actual deer fawning sites located near springs or within aspen pockets are limited to less than five acres of the total project area. Deer use the aspen and Mt. big sagebrush communities for foraging, resting, and hiding cover throughout the spring, summer and fall. These plant communities are generally not affected by quarrying, and will likely continue to provide adequate foraging and hiding cover for deer.

Neotropical Migratory Birds -Executive Order (EO) 13186, signed January 10, 2001, lists several responsibilities of federal agencies to protect migratory birds. Additional direction comes from the Memorandum of Understanding (MOU) between USDA Forest Service and USDI Fish and Wildlife Service, signed January 17, 2001. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the Forest Service and Fish and Wildlife Service, in coordination with state, tribal and local governments. The MOU identifies specific activities for bird conservation, primarily to strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent the further loss or degradation of remaining habitats on National Forest System lands.

In this analysis the Forest Service consulted the Utah Partners in Flight Avian Conservation Strategy for direction on migratory birds. This plan provides the impetus for migratory bird conservation efforts in Utah. The strategy focuses management efforts on maintaining and/or improving **high priority** habitats. Two high priority habitats affected by the proposal are the riparian and sagebrush habitat types. Implementation of actions that maintain these habitat types within the project area would likely support the widest range of avian species dependent upon each type for critical life processes. Currently the sagebrush habitat within the project area is providing adequate habitat for migratory bird species dependent upon this community. Some of the riparian habitat (two spring sources and portions of Clark's Basin Creek) have been negatively impacted by quarrying activities.

Alternative 1 - Proposed Action

Threatened and Endangered Species

Bald Eagle and Yellow-billed Cuckoo – Under the Proposed Action alternative, Bonneville Quarries, Inc. proposes to expand it existing operation into two new quarry locations. Since these species are not known to nest, forage or winter within or adjacent to the project area, there will be no effect to these species.

Forest Service Sensitive Species and Neotropical Migratory Birds

Under the Proposed Action alternative, Region IV Sensitive species and Neotropical migratory birds that are dependent upon sagebrush habitat and springs and seeps within the proposed quarry expansion would be impacted. Impacts would be similar to those discussed for Greater sage-grouse, a Management Indicator Species analyzed for the Proposed Action (see MIS section/Proposed Action). Generally, mitigation measures prescribed in the Plan of Operations for the Quarry Expansion would minimize impacts to these species by limiting the degree of magnitude of the actions on these species. For those species that depend on the habitat types found within the project area for part or all of their requirements, adequate habitat is present to maintain viable populations

Management Indicator Species

Greater Sage-grouse - Under the Proposed Action alternative, Bonneville Quarries, Inc. proposes to expand its existing operation into two new quarry locations increasing the total acres of disturbance from quarry activities to 17.82 acres. The expansion of two new quarries would result in the disturbance of an additional 4.6 acres of sagebrush habitat. Reclamation of abandoned quarries would occur concurrently with the development of the new quarries. It is expected to take up to 15 years for vegetation to become fully re-established to pre- project conditions in the abandoned quarries. This would reduce the total disturbed acres (over time) to approximately 10 acres, essentially resulting in no further loss of sagebrush habitat. New quarry locations would be reclaimed at the completion of quarrying operations, which is expected to be thirty years. Until sagebrush and native grasses and forbs have had time to become re-established in the reclaimed quarries, foraging and nesting habitat for sagebrush dependent species would be reduced by approximately 17 acres. Most of the existing quarry locations occupy quartzite ridges that support black sagebrush (Artemisia nova) at very low densities and low canopy cover. Grouse likely spend more time foraging, and seek cover in, the more forb dominated Mt. Big sagebrush stands in the swales and valleys surrounding the quarry locations than on the black sagebrush ridges. Based on field observations by resource specialists, the ridges with black sagebrush tend to be used more in late fall prior to sage-grouse moving to lower elevation wintering grounds.

Specific mitigation measures and best management practices (See mitigation section) required for the protection of springs, seeps and riparian areas will likely maintain, and in some areas improve, these habitats. Buffers (and monitoring) will be put into affect

around seeps and springs minimizing affects to critical water sources. This will benefit sage-grouse as well as all species of wildlife within the project area.

The use of heavy equipment, air drills, blasting, and road traffic associated with quarry operations will continue with the possibility of behavior modification to sage-grouse. These activities are most likely to affect the late brood rearing period for sage-grouse within the project area. Blasting activities are expected to occur once a month and will not likely increase in time or intensity from previous operations. Under the proposed expansion, loads of stone hauled would increase from one to two loads per day. While sage-grouse and mining interactions are not well understood, sage-grouse occupying sagebrush habitat adjacent to the project area likely avoid areas of high noise/ activity levels. They likely disperse into the surrounding sagebrush. In addition to behavior modification, there is a slight increase in risk of mortality to grouse due to vehicle collisions. The off road motorized vehicle closure (and gate as mitigation) within the project area (May 1 through June 30th, Box Elder County Ordinance 222) would decrease risks to sage-grouse from non mining vehicle travel.

Other Species

Mule Deer – Under the proposed action, deer will likely use aspen and sagebrush communities for foraging, resting and shading similar to the no action alternative. Since the quarry operations take place on the quartzite ridges, this will likely not affect use of aspen and Mt. Big sagebrush communities where deer forage the most. There may be some disruption or behavior modification during the fawning period due to increased road use and noise/activity levels. Interactions between increased quarry activities and wildlife could result in an increase in energy expenditure of deer. Depending on the extent of the impact, weather and availability of other resources, the interactions can impact the deer, particularly the survival of fawns. There is some risk of direct mortality to fawns from vehicle collisions. The off road motorized vehicle closure (and gate as mitigation) within the project area (May 1 through June 30th, Box Elder County Ordinance 222) would decrease risks to deer from non mining vehicle travel.

Under Alternative 1 – Proposed Action, the Forest Plan direction for Wildlife would be met.

Alternative 2 - Current Level of Quarrying

Threatened and Endangered Species

Bald Eagle – The Minidoka District of the SNF provides limited wintering habitat for the Bald Eagle and does not provide breeding habitat. There are no known bald eagle nest territories on the Raft River Division or within the Dove Creek Quarry Operation. The nearest bald eagle nest territory is several miles southeast of the Division along the Bear River in Utah. Bald eagles have been observed wintering along the Raft River roughly 10 to 20 miles north of the project area. Bald eagles generally utilize cottonwoods and snags near open water

as wintering roosting sites, and feed opportunistically on live or dead fish, waterfowl, and mammals (Beck 1980). The riparian areas within the project do not support cottonwoods, or large snags that provide good roost sites for bald eagles. Since bald eagles do not winter within the vicinity of the Dove Creek Quarry and are not known to forage there, the existing quarry operation is a localized impact and has no effect on the overall population of wintering bald eagles in northern Utah.

Yellow-billed Cuckoo- Yellow-billed cuckoos in the West are overwhelmingly associated with relatively expansive stands of mature cottonwood-willow forests with shrubby under stories. They appear to be dependent on the combination of a dense willow under story for nesting, a cottonwood over story for foraging, and large patches of riparian habitat in excess of 50 acres (USFWS 2001). Their diet consists mainly of insects. It is unlikely that this species exists within the project area due to the lack of large tracks of cottonwood-willow habitat.

Management Indicator Species

Greater Sage- Grouse - Sage-grouse likely use seeps, springs, and wet meadows within the project area during late brood rearing. These sites provide ideal forage for growth of chicks. There have been impacts to springs and seeps in the project area due to road construction and other activities associated with the quarry operation and other human impacts. Sage-grouse are also known to use sagebrush/forb-dominated communities for late brood rearing within the proposed project area. Current quarry operations have impacted late brood rearing habitat by reducing sagebrush habitat where quarrying actually occurs. This equates to approximately ten acres of sagebrush habitat within the project area that have been removed from sagebrush production. This reduction in sagebrush has likely had an effect on forage and escape cover for grouse. However, most of the existing quarry locations occupy quartzite ridges that support black sagebrush (*Artemesia nova*) at very low densities and low canopy cover. Grouse likely spend more time foraging in the more forb dominated Mt. Big sagebrush communities in the swales and valleys surrounding the quarry locations than on the black sagebrush ridges. Based on observations of resource specialists, the ridges with black sagebrush tend to be used more in late fall prior to sage-grouse moving to lower elevation wintering grounds.

The existing use level of heavy equipment, blasting, and road traffic associated with quarry operations may disrupt or modify behavior of sage-grouse. This can result in a modification of nesting or foraging behavior and possible displacement from brood rearing areas. Sage grouse are particularly sensitive to disturbance during the lek period (BLM 2004). Known lek sites are 2-3 mile south of the project area (off forest) and, generally, lek activity is completed in northern Utah before quarry operations resume each spring.

Other Species Affected by Management Actions

Mule Deer- The sagebrush/grasslands, spring, seeps, and pockets of aspen within the vicinity of the Dove Creek quarry provide important fawning and fawn rearing habitat for mule deer. Deer continue to use the aspen and sagebrush communities for foraging, resting, shading and hiding cover throughout the summer, fall, and early winter. The existing use of heavy equipment, blasting, and road traffic associated with quarry operations may disrupt or modify behavior of deer. This disruption may affect foraging efforts and security needs and may be most disruptive during the fawning period in early June. Quarry activities and wildlife interactions can result in an increase in energy expenditure of deer. Depending on the extent of the impact, weather and availability of other resources, the interactions can impact fawn survival. There is slight of risk of direct mortality to fawns from vehicle collisions.

Currently, off road motorized vehicle travel within the project area is restricted to designated roads and trails from May 1 through June 30th (Box Elder County Ordinance 222).

Neotropical Migratory Birds-Existing Quarry operations have likely impacted foraging habitat for neotropical migratory birds by reducing sagebrush habitat where quarrying actually occurs. Most of the existing quarry locations occupy quartzite ridges that support black sagebrush at very low densities and low canopy cover. Abundant Mt. Big sage/basin big sagebrush communities with a variety of canopy cover and grass and forbs characterize the project area and the surrounding Clark's Basin. It is likely that adequate sagebrush habitat exists in proximity to the project area to support these species.

Riparian habitat associated with springs and seeps (that is important to neotropical migrants as well as all wildlife) has been impacted in the past in localized areas by mechanical equipment associated with the quarries. Riparian dependant species have likely been impacted in two specific springs. One of these springs has been fenced to protect the spring source, the surrounding vegetation and to allow recovery. There are numerous springs in proximity to the project area that have not been impacted by quarry operations and have been assessed to be in good condition. There is likely adequate habitat to support riparian dependent species.

Under Alternative 2 – No Action, the Forest Plan direction for Wildlife would be met.

Alternative 3 - Proposed Action with Timing Restrictions

Mining of new quarry areas would be limited to one haul truck per day from the two new quarry locations until June 30th after sage-grouse nesting, deer fawning, and the domestic livestock lambing period have ended.

Threatened and Endangered Species

Bald Eagle and Yellow-billed Cuckoo – Under Alternative 3, Bonneville Quarries, Inc. proposes to expand it existing operation into two new quarry locations after sage grouse nesting, deer fawning, and the domestic livestock lambing period. Since these species are not known to nest, forage or winter within or adjacent to the project area, there will be no effect to these species.

Forest Service Sensitive Species and Neotropical Migratory Birds – Region IV Sensitive species and Neotropical migratory birds would benefit most from Alternative 3. New quarry operations would not begin until after June 30th. Nesting activities for neotropical migrants would be well under way and many nestlings will have hatched before new quarry operations would begin. While disruptions in some brood rearing cycles could still occur as the result of continued operations in existing quarries, impacts to fledged birds would likely be minimal. Effects similar to Alternative 2 would return with the resuming of quarrying activities at the end of June.

Management Indicator Species

Greater Sage-grouse – Greater sage-grouse would benefit most from Alternative 3. Sage grouse chicks would be hatched and traveling with the brood by June 30th. Less quarrying activity and disturbance would minimize impacts during the nesting/early brood rearing period. No rock hauling during this time would virtually eliminate loss of young grouse due to collision. Effects similar to Alternative 2 would return with the resuming of quarrying activities at the end of June.

Other Species

Mule Deer – Mule deer would likely benefit most from Alternative 3. Mule deer in the Dove Creek area generally have fawned by June 15th. This alternative would provide for the least amount of disturbance and least possibility of death by collision during the fawning period. After June 30th effects to mule deer in the area would be similar to Alternative 2.

Under Alternative 3 – Proposed Action With Restrictions, Forest Plan direction for Wildlife would be met.

Table 2 - Effects to Deer Fawning-Sage Grouse Nesting

	Alternative 1	Alternative 2	Alternative 3
Level of haul truck travel and equipment activity during deer fawning and sage-grouse nesting (May and June) Issue #1	Average 2.1 Haul Trucks Per Day From New Quarries	0 Haul Trips Per Day From New Quarries	1 Haul Trip Per Day From New Quarries
Addition of gate to restrict off-road motorized travel	Gate	No gate	Gate

during deer fawning and sage-grouse nesting (May and June) Issue #1			
Change in disturbance acres to sage grouse habitat	13.12 acres	8.52 acres	13.12 acres
Change in disturbance acres to deer fawning habitat	< 2 acre	5 acres	< 2 acres

ISSUE #2 HYDROLOGY AND SOILS INCLUDING SEEPS & SPRINGS

Existing Conditions – Hydrology

The proposed quarry locations are within the Northern Great Salt Lake Subbasin (#16020308; 4th field HUC), Dove Creek Watershed (#1602030817; 5th field HUC), and the Upper Dove Creek Subwatershed (#160203081704; 6th field HUC).

Dove Creek Watershed: 126,402 acres
Upper Dove Creek Subwatershed: 18,441 acres

There are approximately 31 springs and seeps in the vicinity of the project area. Many of the seeps and springs in the general project vicinity appear to be related to the thrust faulting in the area. The Upper Dove Creek Subwatershed has a 1.78 mi/mi^2 road density with about 5.50 miles of roads located within the RCAs (Table 3).

The 2003 Soil, Water, Riparian and Aquatic Technical Report (SWRA) indicated that Upper Dove Creek Subwatershed had a 0% ECA (Equivalent Clearcut Area). The Utah Department of Environmental Quality (UDEQ) prepared a list that represents the status of Utah stream water quality conditions. The results of the assessment are found in the *Utah's 2000 303(d) List of Waters* (Utah Department of Environmental Quality, Division of Water Quality). The list did not identify any water quality limited streams within the subbasin.

There are approximately 54 miles of streams, with a stream density of 1.88 mi/mi^2 in the Upper Dove Creek Subwatershed. There are about 17.45 miles of perennial streams and 36.62 miles of intermittent streams. Past beaver activity has occurred at several springs and creeks within the project area, but no current beaver activity has been found.

Existing Conditions - Soils

The Raft River Division, of the Sawtooth National Forest is generally dominated by metamorphic bedrock with alluvial deposits at the base of the mountain ranges with a mixed parent material. Cambrian rocks are present in the Raft River Range that contains two units that include the schist of Mahogany Peaks and the quartzite of Clark Basin (Doelling, 1980). The flaggy quartzite is generally 400 to 600 feet thick that interfingers with Precambrian rocks in the lowermost strata (Doelling, 1980). Thrust faulting has occurred in the general project area.

The landtype was identified in the Raft River Soil Resource Inventory (1985-1986) as a Moderately Dissected Mountain Slopeland (312-SG). Soil surface texture is generally a loamy sand, with a loamy coarse sand to sandy loam subsoil. This landtype was characterized in the Raft River Soil Resource Inventory as follows:

> Landtype Characteristics: The dominant feature about this landtype is the vegetation. The vegetation is dominantly low sage, grass, and forbs. This landform is influenced by elevation and aspect. The landscape has been dissected by overland flow. The appearance is irregular with a dendritic drainage pattern. This landtype receives precipitation mostly in the form of snow. The growing season is very short. Exposed bedrock and shallow soils are common. The bedrock is dominantly metamorphic quartzite and schists. This landtype ranges from 6,000 to 9,000 feet in elevation. The slopes dominantly range from 10 to 55 percent.

The project area is generally situated at 7000 to 7320 foot elevation. The project area is located in Management Area 18 – Raft River, Management Prescription Category 6.1 – Restoration and Maintenance Emphasis within the Shrubland and Grassland Landscapes (Sawtooth Land and Resource Management Plan (LRMP) Vol. 1, pg. III-290)

The Total Soil Resource Commitment has been defined by the Sawtooth National Forest Land and Resource Management Plan (Forest Plan), Volume 2 (2003):

> "TSRC is the conversion of a productive site to an essentially non-productive site for a period of more than 50 years…Productivity on these areas range from 0 to 40 percent of natural".

The Total Soil Resource Commitment (TSCR) is evaluated across an all-inclusive activity area. The claim block in which the proposed quarry sites are located was defined as the all inclusive activity area for this project. The TSRC is estimated to be about 3.14 percent of the project activity area.

Landslide potential within the proposed quarry and road construction sites was assessed using Forest–wide GIS coverage for landslide-prone hazard rating USFS GIS/Arcview 3.2 program. The LSP in the project area was rated as stable. There were no low, moderate or high ratings designated for the proposed quarry or road construction activity sites. Two seeps exist below the proposed Vertical Cloud Quarry in Section 13 (Photo 5). The nose of the smaller seeps soil mass has an abrupt slope break with water flowing from the base of the mass indicating slope instability. There are aspen trees with bowed trunks in the seep area that may also indicate potential soil movement, however, this could also be the affect of snow accumulations causing trees to have bowed trunks. The second larger seep is a highly saturated mass that has an overall hummocky appearance and scarps within the mass.

Photo 5 Seep/Slump Area

Currently, Forest Plan direction for Soils and Hydrology is being met.

ENVIRONMENTAL CONSEQUENCES – HYDROLOGY AND SOILS

Alternative 1 (Proposed Action) Effects

Mass wasting:
Blasting would be conducted by drilling a hole and filling the hole with an explosive and would not be a deep, confined blast. Blasting is proposed to occur once a month at the proposed Sunshine East Quarry. No blasting would occur at the proposed Vertical Cloud Quarry that is proximate to the unstable seeps. Therefore the unstable seeps would not be subject to blasts in the close proximity. The nearest blast to the unstable seeps would occur approximately 1100 feet away on an adjacent hillside across the intermittent drainage. The unstable seeps would be monitored after each monthly blasting. In the event of mass movement or instability associated with the blasting, the authorized officer would be notified immediately and blasting activities would cease until the situation could be further assessed.

Alteration of spring flows from blasting:
As previously mentioned, the blasting would be conducted by drilling a hole and filling the hole with an explosive powder and therefore would be a shallow blast as opposed to a deep, confined blast (personal communication with Steve Flock, 11/2003). The nearest springs are down slope approximately 550 feet away from the proposed blasting area at Sunshine East Quarry. Blasting effects on springs are unlikely if the blast occurs at 500 feet from the source of water supplies when blasting is required for coal mining (Pennsylvania Department of Environmental Protection, 1997). Coal mining requires larger and deeper confined blasts over a much larger area that would create more subsurface and surface vibration. This suggests that the springs would be at a sufficient distance from the proposed blasting area.

Water quality Compliance:
Federal Agencies are to comply with state water quality standards and other pollution control requirements according to Section 313 of the Clean Water Act (IDHW, 1988). The *Utah Nonpoint Source Pollution Management Plan (2000)*, identified management programs for nonpoint sources of pollutions. The *Utah Nonpoint Source Pollution Management Plan (2000)* discusses the mining program and indicated that *water quality impacts from mining were generally localized and are not a significant statewide problem to warrant completion of a management plan for mining* at the time of publication. Therefore, to date, no Mining NPS plan existing for the state of Utah.

The Project Design Features; Best Management Practices (BMPs) and mitigation measures would be applied to meet state water quality standards to protect water quality and protect designated beneficial uses.

Chemical Contaminants
The proposed quarry excavation would occur in a quartzite, which is not known to be sulfide bearing. The inert quartzite would therefore not pose an acid rock drainage effect (metal

dissolution) since sulfide ore deposits are not present. Therefore the Sunshine East Quarry, which is proposed to remain an open pit, would not be susceptible to acid rock drainage effects impairing the quality of the water that may impound in the pit. Furthermore any runoff from the quarry sites or potential infiltration to water table would likewise not be impacted by acid rock drainage effects.

No fuels or lubricants are proposed to be stored on site. Fuel or lubricant spills from equipment failure could occur. If such equipment problems occur the equipment would be brought to a lined containment area to prevent contamination of groundwater or surface runoff. Fueling or lubricating equipment would also take place in the lined containment area.

Sediment

An increase in sedimentation and erosion could occur in the project area due to project activities. Sediment could potentially be available from the roads, waste rock piles, and quarry operation areas. With the application of project design features: BMPs and mitigation measures, it is expected to decrease the temporary through long-term likelihood of sediment delivery to streams in quantities sufficient to impact water quality conditions.

Photo 6

Road construction under Alternative 1 includes the utilization of 4500 feet of non-system roads that was constructed in 2000, the reopening of 650 feet of road previously reclaimed in 2000, and construction 1225 feet of new access road. Additionally, the existing nonsystem road crosses an intermittent tributary to Clarks Basin Creek. To protect the crossing, it's proposed to be graveled as described in the Project Design Features (PDF) portion of this document. The same non-system road also crosses an ephemeral drainage and the 1225 ft. proposed new construction that crosses a drainage would have low gravel crossings, as described in the PDF portion of this document.

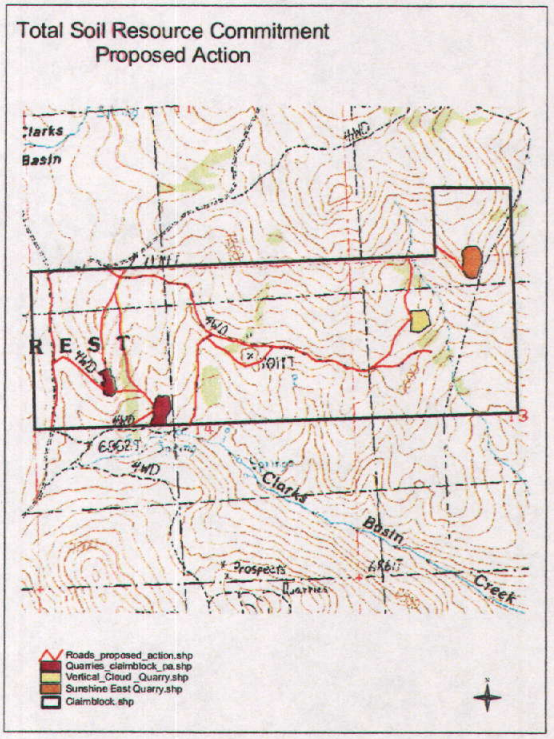

Figure 4 TSRC

Total Soil Resource Commitment:

Before mining of the proposed Vertical Cloud and Sunshine East Quarries can be begin, Dads Dream,

Upper White, and portions of West Quarry would be reclaimed. Approximately 3.7 acres of existing quarry and road reclamation would occur under the existing mining plan of operation. These road acres that are currently bonded under the existing mining plan of operations could potentially be moved out of this category upon successful reclamation. Upon successful reclamation of these sites, it would be determined if they meet the LRMP's > 40% productivity so that they could be removed from the TSRC category. If they are not considered to be adequately restored the TSRC would be 3.50% (see TSRC reclaimed acres <40% productivity column in Table 4), exhibiting no change from the current existing environment. However, if they are found to be considered adequately restore, then the TSRC would be 2.39% (see TSRC-reclaimed acres >40% productivity column in Table 4)

Alternative 1 - Total Soil Resource Commitment was calculated using the USFS GIS/Arcview 3.2 program to evaluate the area in roads within the project area. Information regarding the existing mine site areas was provided by the USFS Geologist and is shown in Table 4:

*Table 4 –**TSRC % s based on reclaimed acres achieving or not achieving >40% productivity.***

Quarry & Roads	*Projected Acres-after successful eclamation*	*TSRC % (based on adequately restore acres achieving >40% productivity)*	*Projected Acres after reclamation - Reclaimed acres productivity <40%*	*TSRC% (reclaimed acres <40% productivity)*
Main	*2.82*	*2.39*	*2.82*	*3.50*
Dad's Dream	*0*		*1.6*	
West	*1.37*		*2.74*	
Upper White	*0*		*.73*	
Roads	*7.79*		*8.53*	
2003/2004 reclamation	*0*		*1.11*	
Total	*11.98*		*17.53*	

Under Alternative 1, Forest Plan direction for Soils and Hydrology would be met.

Alternative 2 (No Action – Current Management)

The soil movement within the unstable seeps would continue at their present rate of movement. Spring and seep would continue to flow at present rate, or as climatic conditions dictate.
Existing quarry and road reclamation would occur under the existing mining plan of operation. The road acres that are currently bonded under the existing mining plan of operations could potentially be moved out of this category upon successful reclamation. Upon successful reclamation of these sites, it would be determined if they meet the LRMP's > 40% productivity so that they could be removed from the TSRC category. If they are not consider to be adequately restored then the TSRC would be 3.36% (see TSRC reclaimed acres <40% productivity column in Table 3), exhibiting no change from the current existing environment. However, if they are considered to be adequately restored then the TSRC would be 1.97% (see TSRC-reclaimed acres >40% productivity column in Table 5)

Table 5– TSRC % s based on reclaimed acres achieving or not achieving >40% productivity.

Quarry & Roads	*Projected Acres-after successful Reclamation*	*TSRC % (based on adequately restore acres achieving >40% productivity)*	*Projected Acres after reclamation - Reclaimed acres productivity <40%*	*TSRC% (reclaimed acres <40% productivity)*

Main	*2.82*	*1.97*	*2.82*	*3.36*
Dad's Dream	*0*		*1.6*	
West	*1.37*		*2.74*	
Upper White	*0*		*.73*	
Roads	*5.70*		*7.84*	
2003/2004 reclamation	*0*		*1.11*	
Total	*9.89*		*16.84*	

Under Alternative 2, Forest Plan direction for Soils and Hydrology would be met.

Alternative 3 (Proposed Action with Limited Access)

Under Alternative 3, effects will be identical to Alternative 1, except that limiting haul truck travel to one trip per day would reduce the sedimentation potential on the access road to the new quarries during May-June as opposed to the average 2.1 trips per day under Alternative 1.

*Table 6 - **Hydrology Issues – effects by alternative***

	Alternative 1	Alternative 2	Alternative 3
Changes in volume of flow from the seeps	Possible-Especially at 2 Seeps Below Vertical Cloud Quarry	No Impact from Mining Activities	Possible-Especially at 2 Seeps Below Vertical Cloud Quarry
Soil failure within saturated seep areas	Possible Increase of Rate of Soil Failure within Existing Failure Areas Primarily at Seeps Below Vertical Cloud Quarry	Possible Continuation of Soil Failure at Natural Rate Primarily at Seeps Below Vertical Cloud Quarry	Possible Increase of Rate of Soil Failure within Existing Failure Areas Primarily at Seeps Below Vertical Cloud Quarry

Under Alternative 3, Forest Plan direction for Soils and Hydrology would be met.

ISSUE #3 - RANGE

Existing Conditions

The project area is within the Clarks Basin Sheep and Cattle Allotment. The grazing permit allows the grazing of 2 bands of sheep, 1000 head per band, from 5/16-7/11. The Kunzler family, who holds the permit, owns private land adjacent to the allotment and uses the area for spring range lambing. Lambing starts the first of May on their private land and continues through the first part of June as they move onto National Forest System Lands.

Cattle are grazed on the Clarks Basin Allotment in the spring and fall. The permit allows for grazing 150 cow/calf pair in the spring and 225 pairs in the fall. The spring use is from 6/10 to 7/1 and fall use is from 9/5 to 10/10.

Currently, Forest Plan direction for Rangeland Management is being met.

Alternative 1 (Proposed Action) – Range Effects
Alternative 1 would increase both the amount of vehicle and equipment traffic as well as opening up new road access to the Vertical Cloud and Sunshine East Quarries. The major concern with the projects is that activities could occur in the spring while sheep are lambing and watering near the project area. It takes several weeks for a lamb to develop a sense for their environment and the potential of lambs being hit, while trailing from water and feed, by mine vehicle traffic is probable. The restriction of public access to the new quarry roads would reduce the number of non-mining related vehicle trips during the lambing season.

Under Alternative 1, Forest Plan direction for Rangeland Management would be met.

Alternative 2 (No-Action Alternative) – Range Effects
Under Alternative 2, mining operations would continue at existing levels with the continued possibility of lambs being hit by mine vehicles and non-mining vehicles on existing roads.

Under Alternative 2, Forest Plan direction for Rangeland Management would be met.

Alternative 3 (Proposed Action with Limited Access) – Range Effects
Alternative 3 would increase both the amount of vehicle and equipment traffic as well as opening up new road access to the Vertical Cloud and Sunshine East Quarries, but would limit the number of haul trips per day to the new quarries to one trip per day. Possible impacts to lambs from vehicle collisions is still possible, but would be much less than Alternative 1 where an average of up to 2.1 haul trucks per day would travel from the new quarries. Haul travel from the existing quarries would not be limited since travel is primarily over private lands where the mining company has title to the mineral rights.

Under Alternative 3, Forest Plan direction for Rangeland Management would be met.

Table 3 - Effects to Lambing-Alternative 3

	Alternative 1	Alternative 2	Alternative 3
Level of equipment activity during lambing season. (May and June) Issue #3	Average 2.1 Haul Trucks Per Day From New Quarries	0 Haul Trips Per Day From New Quarries	1 Haul Trip Per Day From New Quarries

CUMULATIVE EFFECTS

The following projects are identified in the Schedule of Proposed Actions (July 01, 2004 to September 30, 2005) within the Upper Dove Creek Subwatershed:

1.) The Raft River Aspen Regeneration Project, located in T. 13 N. R 15 W. Section 8, would use mechanical disturbance for vegetative treatment to encourage aspen regeneration.

2.) Clark's Basin Plan of Operation, located in T 13 S. R. 16 W., Section 14. The proposal is for a Mining Plan of Operation to quarry Oakley Stone.

The Raft River Aspen Regeneration Project has resulted in minimal earth disturbing activities in proximity to aspen stands in the area. Prescribed fire could also be utilized with the possibility of fire control lines constructed using hand tools only. Prescribed fire would likely occur in the spring or fall resulting in a less intense fire, which would be less likely to result in the development of a hydrophobic layer in the soil, as well as being less likely to completely consume the duff layer. Thus, this project is not anticipated to contribute towards measurable cumulative effects.

The Clarks Basin Plan of Operation (Interstate) could potentially result in the addition of new roads that would increase road densities, if new roads were proposed. The mining plan of operations could result in potential sediment increases from the addition of new quarry operations and new roads, if proposed.

There are five other operators that have quarries that in close proximity to the Dove Creek Quarry. Three of these are located on National Forest System lands:

Shimmer Lady	- 0.1 acres
Hechtle (Stone Art)	- 0.5 acres
Interstate (reclaimed 8/04)	- 3.0 acres

Two other quarries are located on private land:

Dove Creek Pass	- 5.0 acres
Peterson	- less than 5 acres

The Shimmer Lady, Hecthle, and Dove Creek Pass Quarries have been inactive since 2000. The Interstate Quarry was reclaimed in 2004. The Peterson Quarry operates only intermittently.

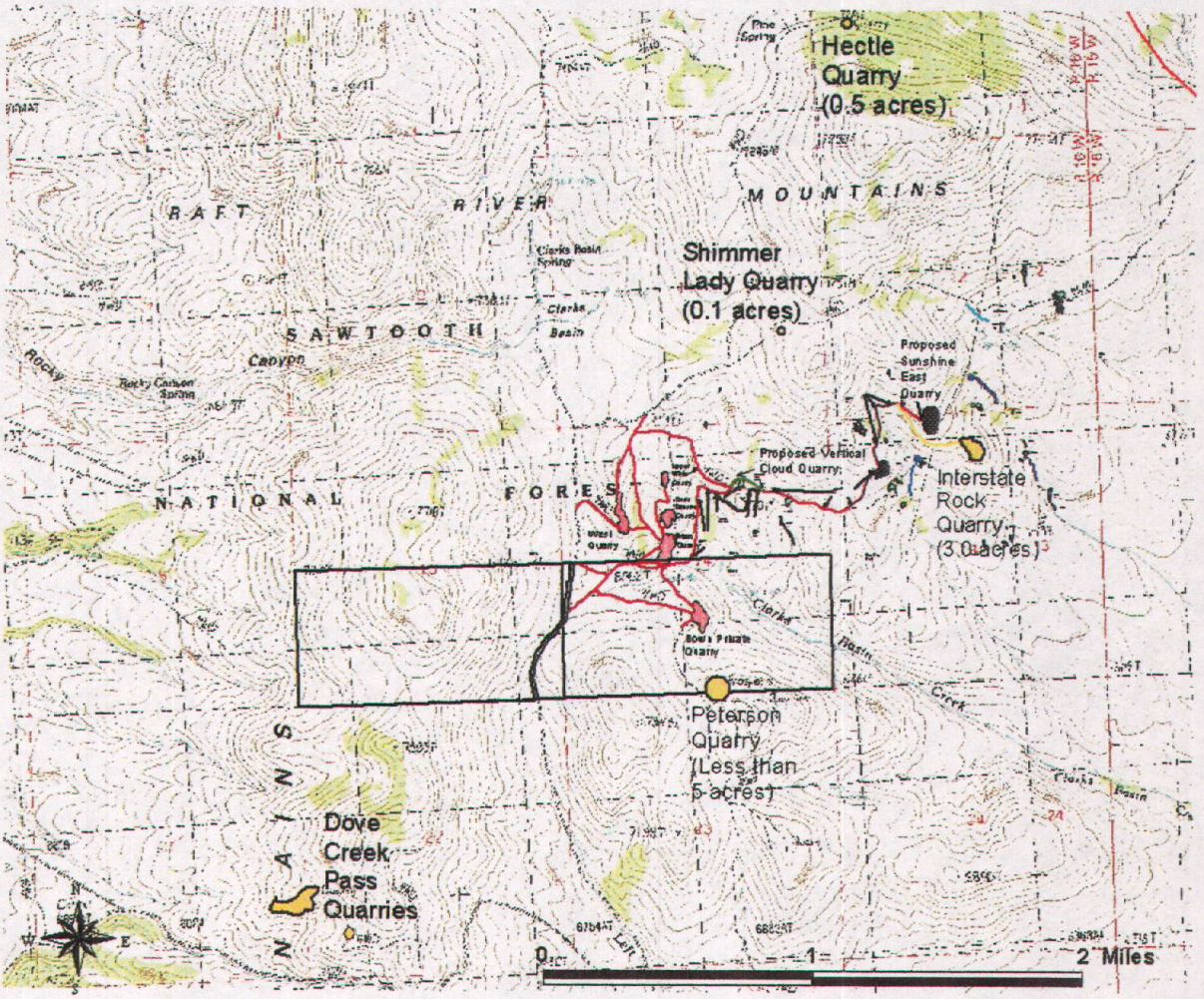

Figure 5 –Nearby Quarries

Issue #1 - Wildlife

The following three forest activities have the potential to interact with the direct and indirect impacts of the Proposed Action, resulting in cumulative effects to wildlife.

Recreational Use - Year round recreation may occur in Clark's Basin and adjacent to the quarry operation. Activities concurrent with the quarry activities are primarily hunting, with some motorcycle and ATV use. These impacts can affect wildlife directly and indirectly. Recreational ATV use can result in reduction of vegetative cover, thus indirectly impacting the forage and prey base for wildlife. Recreational use also leads to direct interactions with wildlife, which can disrupt behavior of animals. Impacts may include modification of behavior, disruption or abandonment of nesting activities, and short term or permanent displacement from home ranges. Recreational use is not expected to increase as a result of this project. Overall recreational use is not expected to increase significantly beyond present use over the next several years in this remote area.

Additionally, the Dove Creek Quarry Operation is located within the Box Elder County Access Management Area. There are currently restrictions in place to restrict travel during the key sage grouse nesting and deer fawning periods. The current and anticipated recreational use is not expected to significantly affect wildlife or wildlife habitat beyond current levels. Thus, Alternatives 2 or 3 , combined with on-going recreation activities should result in minor cumulative effects.

Livestock grazing – Livestock grazing use can result in trampling and reduction of vegetative cover, thus indirectly impacting the forage and prey base for wildlife. Livestock grazing in riparian areas adds cumulatively to impacts to species that use willow, riparian, aspen, springs, and seep habitats. Associated impacts include reduced riparian vegetation, suppressed regeneration, compacted soils, degraded springs and increased erosion thus altering habitat for species dependent on riparian areas.

Livestock numbers and grazing seasons are not expected to increase above current levels in the foreseeable future. Revised Forest Plan standards (SLRMP, 2003) emphasize the protection of riparian areas, springs, and seeps affected by all projects. When Forest Plan Standards are implemented, the cumulative effects of continued livestock grazing and quarry activity are not expected to have significant effects on wildlife or wildlife habitat.

Other quarry operations – The current level of disturbance from existing quarries is 16.22 acres. The proposed quarries would add an additional 4.6 acres of disturbance increasing the total acres of disturbance from quarry activities to 17.12 acres. The additional 4.6 acres of disturbance would specifically affect the quartzite ridges that support black sagebrush (*Artemesia nova*). While black sagebrush comprises a small portion of the total sagebrush within the watershed, it is important to sage-grouse as travel ways and forage in the late fall and winter. Overall, less than 5% of the black sage habitat within the watershed would be affected by the proposed quarry operations. Less than 1% of the Mt. Big Sage communities, where sage-grouse spend the majority of time foraging and seeking cover, would be effected by quarry operations. Quarry operations at the proposed level are not expected to have a significant effect on Greater sage-grouse within the Upper Dove Creek Subwatershed.

Issue #2 Hydrology and Soils Including Seeps and Springs

Alternatives 1 and 3:

Disturbance Areas and Sediment Availability:

The current level of disturbance in the subwatershed from quarries is approximately 16.22 acres (see Table 8). Under the existing mining plan of

operations reclamation on existing quarries would reduce this total to 12.52 acres. Initial reclamation would include earthwork and seeding to be completed before excavation of the new quarries could begin. However, the disturbed areas, which would have a 70% vegetation cover requirement would not need to be met for three years. The existing quarries are not projected to expand appreciably outside the areas of existing disturbance, so no additional acreage is anticipated from these quarries in the future. The proposed quarries would add an additional 4.6 acres of disturbance, increasing the total acres of disturbance from quarry activities to 17.12 acres within the subwatershed.

Table 8 - Quarry Disturbance Area

Quarry Name	Existing Acres	Reclamation planned (acres)	Total projected disturbance of existing quarries (acres).	Total proposed disturbance of all quarries (acres)	30 year Projected disturbance upon project completion (based on 30 year project life)
Main Quarry	3.45	-	3.45	3.45	0
Dad's Dream	1.6	1.6	0	0	0
West Quarry	2.74	1.37	1.37	1.37	0
Upper White	0.73	.73 (started)	0	0	0
South Quarry (Private)	2.7	-	2.7	2.7	2.7[1](unknown – pvt.)
Interstate Quarry	0 (reclaimed 07/2004)	-	0	0	0
Peterson Quarry (Private)	5.0	-	5.0	5.0	5.0[2] (unknown –pvt)
Subtotals	16.22	3.7	12.52	12.52	7.7 (unknown – pvt.)
Vertical Cloud	-	-	-	1.42	0
Sunshine East	-	-	-	3.18	3.18
Total	16.22	3.7	12.52	17.12	10.88

Disturbance from both the quarries and the roads are shown in Table 9. As previously stated, an increase in sedimentation and erosion could occur in the project area due to project activities. With the application of project design

[1] Projected reclamation unknown. Quarry is located on private land
[2] Projected reclamation unknown. Quarry is located on private land

features; BMPs and mitigation measures, it is expected to decrease the temporary through long-term likelihood of sediment delivery to streams in quantities sufficient to impact water quality conditions.

Table 9 – Proposed Action Subwatershed Quarry Disturbance Area

Land Management Activity	Subwatershed (acres)	Quarry Disturbance (acres)	Percent subwatershed	Road[3] (acres)	Percent subwatershed	Road and Quarry Disturbance(acres)	Total % disturbance subwatershed
Roads and Quarries	18,441	17.12	<1%	100.76	<1%	117.88	<1%

Alternative 2 – No Action/ Current Management - Hydrology

Road activities:
Approximately 1225 feet of new road construction would not occur. The previously reclaimed 650 feet of road would not be disturbed. Reclamation would likely occur on 5122 feet of roadway while another 6201 feet of road would likely revert back to a two-track jeep trail. This results in 650 feet of road remaining reclaimed and 6737 feet of undisturbed soil or reclamation of existing disturbance from roads. The resulting road density would decrease to 1.74 mi/mi^2. The decrease in road density through reclamation under this alternative would decrease immediately the amount of erosion and resulting sedimentation into surrounding drainages and would confine sedimentation to only the drainages below existing disturbance instead of below the new quarries and their access roads. Possible impacts to seep areas below the proposed new quarries and access roads would also be lessened.

Quarry disturbance:
Table 4 shows that total area of disturbance from existing quarry operations would be approximately 12.52 acres (after projected reclamation acres). Not developing the two new quarry locations under this alternative would reduce the extent of the project area, reducing the number of drainages that could be impacted by an increase in sedimentation. Because of their proximity to several seeps, not developing the two new quarry locations would reduce potential impacts to the surrounding seep areas from quarry operations.

Issue #3 - Range

Cumulative impacts to range would primarily result from additional quarry development with some possible vegetation treatment areas within Clarks Basin such as proposed aspen stand enhancement projects. Continued quarry development would result in loss of

[3] Assumes a 16 foot average road width. The road width was provided by an estimate from Steve Flock based on his field knowledge of the area.

some forage, but the primary impact would be possible collisions between livestock and increasing vehicle and equipment traffic. This impact would be minimized under Alternative 3.

CHAPTER 4 - CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and Local agencies, Tribes and non-Forest Service persons during the development of the environmental assessment:

Forest Service Interdisciplinary Team Members:

Steve Flock – Project Leader/Minerals Spec.
Terry Fletcher – Landscape Architect
Trudy Rhoades-Flock – Hydrologist
Dena Santini –Wildlife Biologist
Jamie Bennett – Archeologist
Kim Pierson – Botanist
Zeke Zimmerman – Recreation Specialist
Kevin Parker - Rangeland Specialist
Jeff Gabardi – Mining Engineer
Jim Simpson – Engineer
Sarah Lau - Engineer
Karl Fuelling - Forester

Federal, State, and Local Agencies:

Bear River Health Dept.
Box Elder County Economic Dev. Comm.
Box Elder Co. Fire Marshall
Box Elder County Commissioners
Box Elder Co. Planning Department
Cassia County Commissioner
Cassia County Public Lands Committee
State of Idaho Department Fish & Game
State of Utah Division of Water Quality
State of Utah Division of Air Quality
State of Utah Resource Dev. Comm.
State of Utah Division of Water Rights
State of Utah Division of Wildlife
State of Utah Department Natural Resources
State of Utah Oil, Gas, and Mining
State of Utah Division of Wilderness Res.
State of Utah Division of Forestry, Fire and State Lands
U.S. Fish and Wildlife Service Utah F.O.
U.S. Army Corps of Engineers
U.S. Bureau of Land Management SLC F.O.
U.S. Environmental Protection Agency Region 8
U.S. Mine Safe Health Administration
U.S. National Marine Fisheries Service

Others:

Paul Barnes
Garth and Maydene Baxter
Bonneville Quarries, Inc.
Box Elder County Wildlife Federation
Bronson Sheep and Cattle Co.
Harvey Carter Family Trust
Walter Carter Estate
Lamont Campbell
Committee for Idaho High Desert
George Douglas
The Ecology Center
Kim Heaton
P. Hudson
Idaho Conservation League
Idaho Sporting Congress
SC/NRPP
IFC Kaiser and Company
Interstate Rock Products

Larry Kempton
Burt Kunzler
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Spencer Brothers
Stan and Carl Spencer
John Spackman and Son
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Terra Resources, LLC
Utah Environmental Congress
Utah Mining Association
Olen Ward
Western Watershed Project
The Wilderness Society
Western Land Exchange Project
Lance Westmoreland
Wilderness Watch
Wild Rockies Alliance

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